

ABSTRACT

Described is a self-contained, small, lightweight, power-efficient and radiation-shielded module that includes a miniature vacuum X-ray tube emitting X-rays of a

5 controlled intensity and defined spectrum. Feedback control circuits are used to monitor and maintain the beam current and voltage. The X-ray tube, high-voltage power supply, and the resonant converter are encapsulated in a solid high-voltage insulating material.

The module can be configured into complex geometries and can be powered by commercially available small, compact, low-voltage batteries.

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